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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,850	02/25/2005	Fabrice Marcel S Bounaix	005803.01040	9602

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MERLINO, AMANDA H	
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2877	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No.	Applicant(s)	
	10/525,850	BOUNAIX, FABRICE MARCEL S	
	Examiner	Art Unit	
	Amanda H. Merlino	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 February 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 12-25* is/are rejected.

7)☒ Claim(s) *11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/25/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claim Objections

Claims objected to because of the following informalities:

a) on claim 1, "stream of test gas", "sample gas", "gas sample" and "stream of test gas" are used for the same element; please correct to keep language consistent;

b) on line 7 of claim 9, it appears that "said axle first end" should read "said axle forward end" to provide antecedent basis;

c) on line 9 of claim 9, it appears that "said axle second end" should read "said axle rearward end" to provide antecedent basis;

d) on line 12 of claim 9, it appears that "said inlet aperture" should read "said entry aperture" to provide antecedent basis;

e) on line 15 of claim 9, it appears that "said inlet opening" should read "said entry aperture" to provide antecedent basis;

f) on line 4 of claim 20, it appears that "the heat exchanger" should read "said heat exchange system" to provide antecedent basis;

g) on line 5 of claim 22 , it appears that "said inlet aperture should read "said entry aperture" to provide antecedent basis.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 3, and 6-8 rejected under 35 U.S.C. 102(b) as being anticipated by McAndrew et al (EP 1 070 943).

With regards to claim 1, McAndrew teaches of a method for detecting a preselected gas in an environment in accordance with figures 2A and 2B and figure 8 comprisng the steps of moving a stream of sample gas in a confined testing area (200), energizing a laser light source (802), preferably a diode laser (paragraph 60) to emit a light beam of preselected frequency that is highly absorbed by the preselected gas (paragraph 62) the laser light source having a thermoelectric cooler (heat control assembly) for temperature control (paragraph 66), passing said light beam through the confined testing area containing the gas (200), measuring absorption of said light beam using a detector (802).

With regards to claim 2, the preselected gas is methane.

With regards to claim 3, the light source is a laser diode.

With regards to claim 6, the cell is a Herriott-type multiplass cell.

With regards to claim 7, light emitted from the light source (802) is split, a portion thereof of said light beam passing directly to a photodetector providing a reference signal that is employed in measuring the absorption of said light beam by said stream of sample gas within said confined testing area.

With regards to claim 8, the light beam after having passed through said gas stream impinges on a photodetector providing an electrical signal for using in measuring absorption of said light beam.

Claims 9-10, 12-14, 16 and 19 rejected under 35 U.S.C. 102(b) as being anticipated by McAndrew et al (EP 1 070 943).

With regard to claims 9 and 13-14, McAndrew et al teach of a cell for use in measuring the concentration of a preselected gas in a gas sample in accordance with figures 2A , 2B, and 8 comprisng an axle with housing (200) wherein housing is formed of a first and second half shell and having a forward an rearward end and having a substantially cylindrical space through which the sample gas flows (paragraph 26), a pump (paragraph 27) for moving the gas sample through said absorption area, a first annular mirror (210) supported at said axle (200) and having an entry aperture (212), a second annular mirror (210) supported at said axle (200) and having an exit aperture (212), a light source (802) supported forwardly of said first mirror and generates a light beam passing through said entry aperture and into said a annular absorption area to be reflected repeatedly between said mirrors, the light beam after multiple reflections passing out through said exit aperture (paragraph 30), a first photodetector (816) for indication the intensity of light beam entering the entry aperture and a second photodetector (806) for measuring the light that transmits through the sample gas and exits through said exit aperture and a means for measuring concentration by using the light detected by the first and second photodetector (paragraph 71).

With regards to claim 10, McAndrew further teaches of a window (804) between said light source (802) and said entry aperture that is positioned at an angle of incidence to said light beam (810) being reflected by the window (804) to strike said first photodetector (816).

With regard do claim 12, McAndrew further teaches of passageways (204 and 206) in said axle communicating said forward and rearward ends with said absorption area which sample gas flow into, through and then out of said absorption area.

With regards to claim 14, McAndrew teach of a thermoelectric cooler thermally coupled to said light source whereby the temperature of said light source is controlled (paragraph 66).

With regards to claim 16, McAndrew teach of the light source being a laser emitting diode.

With regards to claim 19, McAndrew teach of a pump to draw sample gas into and t through said annular absorption area.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4 and 5 rejected under 35 U.S.C. 103(a) as being unpatentable over McAndrew et al (EP 1 070 943) in view of Domash et al (2003/0072009).

McAndrew teaches of a method for detecting a preselected gas in an environment in accordance with figures 2A and 2B and figure 8 comprisng the steps of moving a stream of sample gas in a confined testing area (200), energizing a laser light source (802), preferably a diode laser (paragraph 60) to emit a light beam of preselected frequency that is highly absorbed by the preselected gas (paragraph 62)

the laser light source having a thermoelectric cooler (heat control assembly) for temperature control (paragraph 66), passing said light beam through the confined testing area containing the gas (200), measuring absorption of said light beam using a detector (802).

With regard to claim 4, Mc Andrew discloses the claimed invention except for the light source being a light emitting diode. It would have been an obvious matter of design choice to use a light emitting diode instead of a laser diode, since applicant has not disclosed that a laser diode solves any stated problem, has any specific benefit, or is for any particular purpose and it appears that the invention would perform equally well as a functional equivalent with a light emitting diode.

With regard to claim 5, McAndrew lacks the teaching of the heat control assembly being a heat sink.

Domash et al teach of the heat control assembly being a heat sink (paragraph 64).

At the time of the invention, it would have been obvious to one of ordinary skill in the art to attach a heat sink as shown by Domash et al to the thermoelectric cooler in McAndrew's in order to increase the cooling efficiency which would result in a more accurate measurement.

Claims 15, 17-18, 20, and 22-24 rejected under 35 U.S.C. 103(a) as being unpatentable over McAndrew et al (EP 1 070 943) in view of Domash et al (2003/0072009).

McAndrew et al teach of a cell for use in measuring the concentration of a preselected gas in a gas sample in accordance with figures 2A , 2B, and 8 comprisng an axle with housing (200) wherein housing is formed of a first and second half shell and having a forward an rearward end and having a substantially cylindrical space through which the sample gas flows (paragraph 26), a pump (paragraph 27) for moving the gas sample through said absorption area, a first annular mirror (210) supported at said axle (200) and having an entry aperture (212), a second annular mirror (210) supported at said axle (200) and having an exit aperture (212), a light source (802) supported forwardly of said first mirror and generates a light beam passing through said entry aperture and into said a annular absorption area to be reflected repeatedly between said mirrors, the light beam after multiple reflections passing out through said exit aperture (paragraph 30), a first photodetector (816) for indication the intensity of light beam entering the entry aperture and a second photodetector (806) for measuring the light that transmits through the sample gas and exits through said exit aperture and a means for measuring concentration by using the light detected by the first and second photodetector (paragraph 71).

With regard to claims 15, 22, 23; and 24 McAndrew lacks the teaching of the heat control assembly being a heat sink with a thermostat on a substrate.

Domash et al teach of the heat control assembly being a heat sink (paragraph 64) with a thermostat on a substrate.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to attach a heat sink set on the substrates as shown by Domash et al to the

thermoelectric cooler in McAndrew's in order to increase the cooling efficiency which would result in a more accurate measurement.

With regard to claim 16, Mc Andrew discloses the claimed invention except for the light source being a light emitting diode. It would have been an obvious matter of design choice to use a light emitting diode instead of a laser diode, since applicant has not disclosed that a laser diode solves any stated problem, has any specific benefit, or is for any particular purpose and it appears that the invention would perform equally well as a functional equivalent with a light emitting diode.

Claims 21 and 25 rejected under 35 U.S.C. 103(a) as being unpatentable over McAndrew et al (EP 1 070 943) in view of Kalayeh et al (2005/0134859).

McAndrew et al teach of a cell for use in measuring the concentration of a preselected gas in a gas sample in accordance with figures 2A , 2B, and 8 comprisng an axle with housing (200) wherein housing is formed of a first and second half shell and having a forward an rearward end and having a substantially cylindrical space through which the sample gas flows (paragraph 26), a pump (paragraph 27) for moving the gas sample through said absorption area, a first annular mirror (210) supported at said axle (200) and having an entry aperture (212), a second annular mirror (210) supported at said axle (200) and having an exit aperture (212), a light source (802) supported forwardly of said first mirror and generates a light beam passing through said entry aperture and into said a annular absorption area to be reflected repeatedly between said mirrors, the light beam after multiple reflections passing out through said exit aperture (paragraph 30), a first photodetector (816) for indication the intensity of

light beam entering the entry aperture and a second photodetector (806) for measuring the light that transmits through the sample gas and exits through said exit aperture and a means for measuring concentration by using the light detected by the first and second photodetector (paragraph 71).

McAndrew lacks the teaching of global position system for the identifying the location of the cell.

Kalayeh et al teach of a global positioning system for identifying the location of the cell.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to use the global positioning system of Kalayeh et al and implement it into McAndrew's apparatus in order to check the position of the cell to make sure that the measurements are taken at the right position.

Reasons for Allowance

Claim 11 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claim 11, the prior of record, taken alone or in combination, fails to disclose or render obvious a cell for use in measuring the concentration of a preselected gas in a gas sample including a third photodetector positioned outwardly of said second annular mirror to receive a portion of said light beam that passes through said second annular mirror after said light beam has traveled a reduced length path through said annular absorption area whereby a concentration measurement corresponding to a higher

concentration level can be measured, in combination with the rest of the limitations of claim 9.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amanda H Merlino whose telephone number is 571-272-2421. The examiner can normally be reached on Monday and Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J Toatley, Jr. can be reached on 571-272-2800 ext 77. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Amanda H Merlino
Patent Examiner
Art Unit 2877
June 8, 2007

for Gregory J. Toatley, Jr.
Supervisory Patent Examiner